CLAIMS

What is claimed is:

1. An ion implanter system comprising:

an ion beam generator for transmitting an ion beam to a target in an implant chamber; and

a laser particle detector for detecting at least one particle level within the ion beam based on a received laser beam that has been transmitted through the ion beam,

wherein the received laser beam passes in close proximity to the target.

2. The system of claim 1, wherein the laser particle detector is coupled to a system controller including a beam controller configured to control the ion beam generator based on the at least one particle level during an ion implantation.

3. The system of claim 2, wherein the beam controller stops ion implantation in the case that the at least one particle level exceeds a preset value.

4. The system of claim 2, wherein the beam controller is further configured to control the ion beam generator during a tuning of the ion beam based on the at least one particle level.

5. The system of claim 2, wherein the beam controller is further configured to control the ion beam generator during a uniformity procedure of the ion beam based on the at least one particle level.

6. The system of claim 2, wherein the system controller is also configured to control the ion beam based on the at least one particle level during at least one of a tuning stage of operation and a cleaning stage of operation.

7. The system of claim 2, wherein the laser particle detector includes a bright-field sensing laser and a particle level calculator.

8. The system of claim 7, wherein the bright-field sensing laser includes a transmitter positioned in a first window in the implant chamber and a receiver positioned in an opposing second window in the implant chamber to receive the received laser beam.

9. The system of claim 7, wherein the laser beam passes no less than one eighth of an inch from the target and no greater than four inches from the target.

10. The system of claim 1, wherein the laser particle detector includes a bright-field sensing laser.

11. The system of claim 10, wherein the bright-field sensing laser transmits a laser beam substantially transversely across the ion beam.

12. The system of claim 11, wherein the laser beam passes no less than one eighth of an inch from the target and no greater than four inches from the target.

13. The system of claim 10, wherein the bright-field sensing laser includes a transmitter positioned in a first window in the implant chamber and a receiver positioned in an opposing second window in the implant chamber to receive the received laser beam.

14. A method of detecting a particle level of an ion beam, the method comprising the steps of:

transmitting a laser beam through at least a portion of the ion beam;

directly receiving the laser beam; and

determining at least one particle level in the at least a portion of the ion beam based on the directly received laser beam.

15. The method of claim 14, wherein the transmitting step includes transmitting the laser beam substantially transversely across the at least a portion of the ion beam.

16. The method of claim 14, wherein the ion beam is incident on a target, and the laser beam passes no less than one eighth of an inch from the target and no greater than four inches from the target.

17. A method of controlling an ion implanter system that generates an ion beam, the method comprising the steps of:

transmitting a laser beam through at least a portion of the ion beam;

receiving the laser beam;

determining at least one particle level in the at least a portion of the ion beam based on the received laser beam; and

controlling the ion implanter system during implantation based on the at least one particle level.

18. The method of claim 17, wherein the transmitting step includes transmitting the laser beam substantially transversely across the at least a portion of the ion beam.

19. The method of claim 17, wherein the controlling step further includes controlling the ion implanter system during at least one of a tuning stage of the ion implanter system, a uniformity procedure of the ion implanter system and a cleaning stage of the ion implanter system.

20. The method of claim 17, wherein the controlling step includes stopping ion implantation in the case that the at least one particle level exceeds a preset value.

21. A computer program product comprising a computer useable medium having computer readable program code embodied therein for controlling an ion implanter system that generates an ion beam used in ion implantation, the program product comprising:

program code configured to receive at least one particle level from a particle detector during the ion implantation; and

program code configured to control the ion implanter system based on the at least one particle level during the ion implantation.

22. The program product of claim 21, wherein the control program code is further configured to control the ion implanter system based on the at least one particle level during at least one of a tuning stage of the ion implanter system, a uniformity procedure of the ion implanter system and a cleaning stage of the ion implanter system.